FINAL

ENVIRONMENTAL ASSESSMENT

FOR

TURKEY CREEK LAKE DRAINAGE AREA

WEST FRANKLIN WATERSHED

Franklin Parish, Louisiana

Soil Conservation Sercice

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Draft Environmental Assessment
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Turkey Creek Lake Drainage Area

ABSTRACT

This environmental assessment shows the present fishery condition of Turkey Creek Lake; a probable cause for this condition; a method of alleviating the condition; and the anticipated results of applying the procedure.

While Turkey Creek Lake Drainage Area is a portion of the West Franklin Watershed, this assessment does not assess any impacts of the watershed plan other than those impacts (such as channel construction) which will concern the fishery of Turkey Creek Lake.

Present fish population in Turkey Creek Lake amounts to approximately 20 pounds of gamefish, 38 pounds of forage fish, and 75 pounds of commercial fish per acre. This low population has been related to the presence of DDT and Toxaphene in the bottom sediments and in the fish tissue. The high amount (52,000 tons/yr) of sediment being delivered to the lake carrying residual DDT and Toxaphene (neither pesticide is being applied at the present time) prevents the natural recovery of the lake and has precluded effective management. An opinion from Foster Mayer of the Columbia National Fisheries Research Laboratory, Columbia, Missouri was that game fish hatching where fish tissue concentrations of DDT and Toxaphene exceeded 2 parts per million was greatly reduced.

Reduction in the amount of sediment being delivered to the lake should reduce the pesticide concentrations.

A land treatment program designed to reduce the sediment being delivered to Turkey Creek Lake to 44,000 tons per year has been developed. This program is designed to have a maximum affect at a minimum cost by dividing the drainage area into two priority areas. Priority Area No. 1 is that portion draining directly into the lake. The majority of the land treatment will occur here. The remainder of the drainage area, Priority Area No. 2, will have a less intense program since nearly all of the sediment from this area is deposited before it reaches the lake.

Based on a computer program, known as the "CREAMS" Model, the land treatment program and an effective fish management program will increase the game fish population to approximately 200 pounds per acre.

WEST FRANKLIN WATERSHED
TURKEY CREEK LAKE DRAINAGE AREA[1/]

INTRODUCTION

The West Franklin Watershed application was approved in 1966. Planning authorization was granted in 1968. The National Environmental Policy Act (NEPA) was passed in 1969. This Act required that an environmental impact statement be prepared for any federally assisted projects that had an adverse impact on the environment. Because of prior planning commitments, planning was postponed on West Franklin watershed until watersheds that were approved for operations or in the planning process were in compliance with NEPA.

A field examination was conducted in West Franklin watershed in 1976 and the field examination report was prepared in 1977. The preliminary investigation report was prepared in 1978.

The Turkey Creek Lake drainage area is 106,700 acres. This comprises about 44 percent of the watershed. Following a change in Soil Conservation Service Planning Policy, the Sponsors and the Soil Conservation Service chose to follow the two-stage authorization process with financial and technical assistance for accelerated land treatment.

[1/] All information and data, except as otherwise noted by references to sources, were collected during the environmental evaluation by the Soil Conservation Service.

SETTING

Turkey Creek Lake is a man-made lake with a surface area of about 3,100 acres. It is located in the southern part of West Franklin Watershed. The major tributaries that drain into the lake are Turkey Creek, Little Turkey Creek, West Turkey Creek, Grayson Bayou, and Prickett Bayou. Turkey Creek, Little Turkey Creek, and West Turkey Creek form extensive wetland areas at their confluence with Turkey Creek Lake. About 80% of the drainage area enters the Lake through these tributaries. Grayson Bayou and Prickett Bayou do not have as extensive wetland areas upstream from the Lake. It is through these and other minor tributaries, along with overland flow, that runoff enters the Lake.

Winnsboro, the parish seat of Franklin Parish, is in the northern part of the Drainage Area. Other communities in the area are Chase and Jigger. The drainage area is in the Ouachita River Basin of the Lower Mississippi Region.

The major soil associations that are in the Southern Mississippi Valley Silty Uplands Major Land Resource Area are the Calhoun-Calloway-Loring, Gilbert-Gigger-Egypt, and Necessity-Foley-Deerford (see general soil map Appendix D). The Forestdale-Sharkey soil association is in the Southern Mississippi Valley Alluvium Major Land Resource Area. The Calhoun-Calloway-Loring are loamy, nearly level to gently undulating soils. They are moderately well drained to poorly drained soils that are formed in loess. The Gilbert-Gigger-Egypt soil association is loamy nearly level to gently undulating soils that are moderately well drained to somewhat poorly drained. They are formed in mixed loess and stream terrace deposits. The Necessity-Foley-Deerford soils are loamy and occur on nearly level to gently undulating slopes. They are somewhat poorly drained and are formed in stream terrace deposits. The Forestdale-Sharkey soils are loamy and clayey and occur on level to gently undulating slopes. They are poorly drained and are occasionally to frequently flooded. They are formed in alluvium and occur along major streams.

The average annual rainfall is about 53 inches. The average January temperature is 50 degrees and the average July temperature is 83 degrees. The normal frost-free period, about 237 days, ranges from March 13 through November 5.

Turkey Creek Lake drainage area is located on Macon Ridge and to the West of Macon Ridge in the Boeuf Basin[1/].

General geology maps[2/] depict the area as consisting of Recent (Halocene Epoch or Series) Braided Stream Deposits.

Four main streams, Grayson Bayou, West Turkey Creek, Turkey Creek, and Little Turkey Creek, supply the man-made Turkey Creek Lake. All of these streams are essentially North-South flowing streams. West Turkey

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1/ Fisk, Harold N., Geological Investigation of the Alluvial Valley of the Lower Mississippi River, (Figure 28, Profile D-D') Mississippi River Commission, Vicksburg, Mississippi, December 1, 1944.

2/ Rufus J. LeBlanc, Geological Map of Louisiana, Baton Rouge, Louisiana, March 1948.

Creek displays a sinuosity which depicts a more mature stream with a larger drainage area than is present. Grayson Bayou is less sinuous, and Turkey Creek and Little Turkey Creek are both very youthful. Turkey Creek and Little Turkey Creek drain a loess capped area where the loess is generally three to nine feet thick[3/].

Fisk relates the age of this area to his stages B_2, B, and A_3, of the Mississippi River[1/]. Since the general elevation of Turkey Creek and Little Turkey Creek drainage areas is approximately 5 feet higher than the elevations of West Turkey Creek and Grayson Bayou Drainage areas, the former drainage areas can probably be related to the A_1, and A_2 stages. He relates the formation of this dissected alluvial plain to an ancestral Arkansas River alluvial fan[1/].

The "Mississippi River Alluvial Aquifer" is a source for large quantities of groundwater in the area. Generally, the water is of good to fair irrigation quality. The aquifer is between 80 and 100 feet thick in the area, and its base is between elevations - 20 and - 30 ft. mean sea level[4/]. Surface elevation in the drainage area is around 65 to 75 feet mean sea level. The potentiometric surface of the aquifer is approximately +50 m.s.l. Along the east portion of the drainage area chloride concentrations exceed 250 parts per million[4/]. This narrow zone of excessive chloride occurs near the boundary between clay of the Jackson Group and permeable saltwater-bearing sands of the Cockfield Formation[4/]. These formations directly underlie the Alluvial Aquifer in this area.

The area is basically agricultural. Crop production is the most important sector, followed by pastureland. The major farm and ranch enterprises are soybeans, cotton, and cattle. The present land use for the drainage area is:

Land Use	Acres	Percent
Cropland	67,300	63
Pastureland	10,100	9
Forestland	17,000	16
Urban & Build-up	4,000	4
Water	3,300	3
Other land a/	5,000	5
Total	106,700	100

a/ Includes roads, highways, farmsteads, etc.

There are 473 operating units in the Drainage Area that control 99,400 acres of agricultural and forest land. Land users who control about 42,900 acres have become cooperators with the Northeast Soil and Water Conservation District. Conservation farm plans have been prepared on about 17,860 acres. Conservation measures have been installed on 27,200 acres.

3/ Bob Miller and Arville Touchet, Unpublished Map.

4/ Whitfield, M.S., "Geohydrology and Water Quality on The Mississippi River Alluvial Aquifer," Northeastern, Louisiana, Water Resources Technical Report No. 10, Louisiana Department of Public Works, 1975.

Wildlife habitat types include bottomland hardwoods, wooded channel banks (riparian), open land (pasture and cropland), and wetlands. The bottomland hardwoods are composed of vegetation which supports a variety of game and nongame birds and mammals. Major overstory species in bottomland hardwoods consists of sweetgum, hackberry, green ash, bitter pecan, water oak, willow oak, Nuttall oak, overcup oak, chestnut oak, honey locust, and willow. Understory species include blackberry, dewberry, haws, green brier, rattan vine, Frenchmulberry, and numerous grasses, forbs, and other woody vegetation.

Riparian habitat along streambanks is used extensively by animals for feeding, nesting, escape, resting, and travel lanes. This cover is especially important in cropland areas where little other cover exists.

Openland is considered as wildlife habitat and if managed properly can be very beneficial to both upland and wetland wildlife. Crop residues and cover crops provide a good supply of food and cover to wildlife, especially during the winter months.

Large tracts of wetlands exist in the northern portion of the lake. Overstory here consists of baldcypress, and tupelogum with some of the more aquatic oriented oak species in the fringe areas such as overcup and Nuttall oak. Understory in wetlands consists of buttonbush, swampprivet, waterelm, smartweed, alligatorweed, and duckweed.

Wetlands, as defined by USDI Circular No. 39[5/], comprise 6,059 acres of wetlands in the drainage area. The acres are distributed as follows:

Wetland Types	Acres
1	2,206
2	23
3	27
4	3
5	72
6	60
7	3,668
Total	6,059

The major fishery resource in the area is Turkey Creek Lake. Other fisheries are located on the lower end of Little Turkey Creek, Turkey Creek and West Turkey Creek. In addition, there are several fishponds in the area. Waterfowl, mostly wood ducks and mallards, are provided good to excellent habitat in the Lake.

"Endangered or threatened" wildlife species which could occur in the drainage area are: Eskimo curlew, Arctic peregrine falcon, and the American alligator. The Eskimo curlew and the Arctic peregrine falcon are both migratory species and could occur but are not permanent residents.

Wetlands in the drainage area provide suitable habitat for the American alligator and it is a resident of the area.

5/ U.S. Department of the Interior, Fish and Wildlife Service, Wetlands of the United States, Circular No. 39(USGPO 1965).

FORMULATION

The sponsors have identified watershed protection, flooding, improper drainage, and water quality in Turkey Creek Lake as problems in the West Franklin Watershed. The alternatives considered in this assessment are for the improvement of the water quality in Turkey Creek Lake.

Alternatives considered during plan formulation were oriented toward the two major objectives; National Economic Development (NED) and Environmental Quality (EQ).

Identification of alternatives and selection of the most desirable alternative was begun by examining the various means of achieving the sponsors goal. As a result, the following alternatives were formulated for consideration of the sponsors.

ALTERNATIVES

Alternative 1 - The land treatment program will be installed in two stages. The first stage would consist of installing needed Resource Management Systems (RMS) on 86% of the cropland in 20,700 acres that drains into Turkey Creek Lake through Grayson and Prickett Bayous, other minor tributaries, and by overland flow. This area is designated as Priority Area 1. RMS's consist of conservation practices, and cultural and management measures that will reduce the sediment and pesticides entering the Lake. Financial assistance from P.L. 566 funds and technical assistance from the Soil Conservation Service through the Northeast Soil and Water Conservation district will be used to assist land users to install eligible conservation practices in each RMS.

The second stage would consist of installing needed RMS's on 71% of the cropland in the remaining 86,000 acres of the drainage area. This area is designated as Priority Area 2. In addition to land treatment, channel work and other structural measures will be installed in this stage.

A fish management program for Turkey Creek Lake will be implemented in conjunction with accelerated land treatment and structural measures. The Soil Conservation Service and the Louisiana Wildlife and Fisheries Commission will develop and coordinate this program to insure that the Lake can support increased game fish populations.

Alternative 2 - This alternative includes the installation of Resource Management Systems on 60 percent of the cropland needing treatment in the Turkey Creek Lake Drainage area. In addition, sediment traps will be installed in minor tributaries that drain directly into the Lake. Accelerated technical assistance will be provided to the land users in the area for the installation of this alternative.

Alternative 3 - No project action. There would be no financial or accelerated technical assistance cost. This alternative is the present ongoing program and will not meet the objectives of the sponsors.

PLAN SELECTION

The sponsors chose to implement Alternative 1, which they considered to be the most viable in regard to beneficial effects and adverse impacts. This alternative will hereafter be referred to as the recommended plan.

A comparison of the impacts at the three alternatives is summarized in Table 1.

Table 1 - Summary Comparison of Impacts of Alternatives for Turkey Creek Lake Drainage Area[a/]

Economic, Environmental or Social Factors	Alternative 1 (Accelerated Technical & Financial Assistance to Land Treatment)	Alternative 2 (Land Treatment and Sediment Traps)	Alternative 3 (No Project)
Erosion	Beneficial - Major	Beneficial - Moderate	Beneficial - Minor
Sedimentation	Beneficial - Major	Beneficial - Moderate	Beneficial - Minor
Water Quality	Beneficial - Moderate	Beneficial - Moderate	Beneficial - Minor
Prime Agricultural Land	Beneficial - Major	Beneficial - Moderate	Beneficial - Minor
Streams and Waterbodies	Beneficial - Major	Beneficial - Moderate	Beneficial - Minor
Wetlands	Beneficial - Moderate	Beneficial - Minor	No Effect
Flood Plains	Beneficial - Moderate	Beneficial - Moderate	No Effect
Wildlife Habitat	Beneficial - Moderate	Beneficial - Moderate	Beneficial - Minor
Fish-Aquatic Resources	Beneficial - Major	Beneficial - Moderate	Beneficial - Minor
Recreation	Beneficial - Moderate	Beneficial - Minor	No Effect

a/ Only those impacts significant to decision-making are included. All impacts are based on comparisons with present conditions.

RECOMMENDED PLAN

LAND TREATMENT

The area that drains into Turkey Creek Lake through Bayous Grayson and Prickett, other minor tributaries, and by overland flow is designated as Priority Area 1. The first stage of the land treatment program consists of installing Resource Management Systems on 10,200 acres of cropland in this area. Priority Area 2 includes that area that drains into the Lake through Turkey Creek, Little Turkey Creek, and West Turkey Creek. The land treatment program in Priority Area 2 will begin when the remainder of the West Franklin watershed is approved for operations. RMS's will be installed on 39,200 area of cropland. Appendix E shows the location of Priority Areas 1 and 2.

The land use in Priority Area 1 and 2 is as follows:

Land Use	Priority Area 1		Priority Area 2	
	Acres	Percent	Acres	Percent
Cropland	11,900	58	55,400	63
Pasture	1,800	9	8,300	10
Forest	3,000	14	14,000	16
Urban and built-up	-	-	4,000	5
Water	3,100	15	200	1
Other	900	4	4,100	5
Total	20,700	100	86,000	100

The land treatment program will be installed with Public Law 83-566 Technical and Financial assistance. Conservation measures will be installed as part of Resource Management Systems (RMS) to reduce erosion and sediment, and improve the water quality in Turkey Creek Lake. In addition, structural measures and on-farm drainage systems will be installed in stage 2 to reduce flooding and improve drainage. Appendix A list the RMS's and corresponding conservation practices that will be installed in stage 1.

Decisions to install the land treatment program rest with the individual land users involved. Accelerated technical and financial assistance will be limited to those cases where the desires of the land users are compatible with the goals of the project.

TECHNICAL ASSISTANCE

The planned acceleration in technical assistance will be in addition to that presently available to the land users with the ongoing program of the Northeast Soil and Water Conservation District. It will be used for planning and installing resource management systems needed to reduce erosion and sediment, and improve the water quality in Turkey Creek Lake.

FINANCIAL ASSISTANCE

Financial assistance will be administered in accordance with the policy of Public Law 83-566. It will be provided to supplement funds available under other state and federal programs for the installation of conservation measures to accelerate the achievement of the identified goals of the project. This assistance will be available to land users to improve water quality in Turkey Creek Lake.

The cost-share rate of assistance to individual land users will be established using the rate of other national programs in the parish as a guide. If a practice to be installed with PL-566 funds is not cost-shared by other programs in the parish, a rate will be established using State or National regulations.

INSTALLATION AND FINANCING

Resource Management Systems will be installed by the landusers through agreements between the Service and Sponsors with Long Term Agreements between the Sponsors and landusers. The Soil Conservation Service, through the District, will provide accelerated technical assistance for planning, applying, and maintaining land treatment measures. The SCS will continue to provide technical assistance with the ongoing programs. This additional technical assistance will supplement the ongoing program to expedite the installation of conservation measures.

Non-cost-shared management and conservation practices will be required as a condition for cost-share assistance on permanent practices where such practices are necessary to achieve project objectives. Non-cost-shared practices may be installed concurrently with cost-shared ones.

The cost-share rate established at the time the sponsors sign the watershed plan agreement shall prevail throughout the installation period, unless the rate is modified by mutual agreement between the SCS and the sponsors.

The ongoing land treatment program will be financed by the land users. Cost-sharing assistance from other programs may be used when available.

OPERATION, MAINTENANCE, AND REPLACEMENT

Land treatment measures will be operated and maintained by land users under cooperative agreements with the Northeast Soil and Water Conservation District. Land treatment installed with PL-566 financial assistance will be monitored. Any cost-shared practices destroyed prior to the termination of the long term contract will be replaced at the land users's expense, or cost-shared monies refunded to the Soil Conservation Service.

IMPACTS

The accelerated land treatment program will result in resource management systems being installed on 10,200 acres of cropland in Priority Area 1 and 39,200 acres of cropland in Priority Area 2.

An analysis of impacts of the land treatment program on a broad range of environmental, economic, and social factors were made, and their significance to decision making were evaluated (see table 2).

Table 2 - Analysis of Impacts

Economic, Environmental, and Social Factors	Degree of Beneficial Impact	Significant to Decision Making
Floodwater and drainage	Minor	No
Erosion and sedimentation	Major	Yes
Land use, and flora change	Minor	No
Prime agricultural land	Major	Yes
Streams and waterbodies	Major	Yes
Wetlands	Moderate	Yes
Visual resources	Minor	No
Endangered and threatened animals	None	No
Transportation and employment	None	No
Air quality	None	No
Flood plains	Moderate	No
Groundwater	None	No
Wildlife habitat	Moderate	Yes
Fish-aquatic resources	Major	Yes
Water quality	Moderate	Yes
Mineral resources	None	No
Cultural resources of local or national signficance	None	No[a/]
Recreation	Moderate	Yes

a/ As required by Public Law 93-291, the Soil Conservation Service will notify the Secretary of the Interior if any archaeological materials are found during installation.

From this analysis, it was concluded that the project would have no significant impact on transportation and employment, land use, and flora change, air quality, groundwater, mineral resources, and cultural resources of local or National significance. Therefore, these factors were not discussed in this assessment, although basic data concerning these items have been collected in order to determine the magnitude of project impacts.

EROSION AND SEDIMENTATION

The highly erodible soils with thin surface layers, the high incidence of cultivation, the past use of pesticides with a long half life, and the low stream gradients all combine to make erosion and sedimentation a major resource problem of the area. The thin surface layers contribute to the droughtiness of the soils. They have very little water storage capacity and in order to achieve good yields, frequent rain or irrigation is essential. As erosion removes a portion of the surface layer, the water storage capacity will decrease and even more water is required to achieve the same yields. In the past, both DDT and Toxaphene were used as insecticides and these chemicals are still present in the fields and are carried by the sediment to Turkey Creek Lake. The low stream gradient causes the flow velocity of the streams to be inadequate to transport all the eroded material. This channel aggradation results in more frequent flooding, impaired drainage and increased channel maintenance costs.

Due to the analysis required in this assessment, the "CREAMS"[1/] Model was used in determining erosion and the effects of the land treatment program on this erosion. It is through the use of the "CREAMS" model, that sediment transported off the fields is addressed in this assessment. (See Appendix B)

Present erosion in the Turkey Creek Lake Drainage Area amounts to approximately 540,000 tons per year. Of this amount, approximately 71,000 tons per year occurs in Priority Area 1 and 469,000 tons per year occurs in Priority Area 2. Erosion rates per cultivated acre amount to 5.94 tons per acre per year in Priority Area 1 and 8.36 tons per acre per year in Priority Area 2. At these erosion rates approximately 0.04 inches per acre per year in Priority Area 1 and 0.05 inches per year in Priority Area 2 would be lost. These figures are averages and as such one does not receive the full impact of the implied amounts. For instance, cotton grown on gently sloping fields would have a soil loss of a little over 0.1 inches per year. This can be related to the depth to the fragipan of 18 inches. In 90 years, half of the waterholding capacity would be removed.

Sediment is being deposited in the drainage channels at a rate of approximately 333,000 tons per year. This amounts to 43,000 tons per year in Priority Area 1 and 290,000 tons per year in Priority Area 2.

Sediment being delivered to Turkey Creek Lake from both Priority Areas amounts to approximately 52,000 tons per year. Priority Area 1 supplies 27,000 tons per year or 52% of this sediment. Priority Area 2 supplies the remainder or 25,000 tons per year. Priority Area 1 contributes most of the sediment to the Lake bacause of its proximity and the lack of filtering effects of wetland such as those in West Turkey Creek, Turkey Creek, and Little Turkey Creek.

1/ Knisel, Walter G., Editor, "CREAMS: A Field-Scale Model for Chemicals, Runoff, and Erosion from Agricultural Management Systems," U.S. Department of Agriculture, Conservation Research Report No. 26, May, 1980.

Impacts

Water quality in Turkey Creek Lake would be improved by the installation of an integrated land treatment program that reduces erosion and sediment.

Erosion would be reduced from approximately 540,000 tons per year (5.06 tons/acre/year) to 460,000 tons per year (4.31 tons/acre/year), a reduction of 14%. Ten thousand tons per year would be reduced from Priority Area 1 and 70,000 tons per year from Priority Area 2.

Sediment deposited in channels would be reduced from 333,000 tons per year to 283,000 tons per year, a reduction of 50,000 tons per year. Six thousand tons per year of this reduction would be in Priority Area 1, the reaminder, 44,000 tons per year, would be in Priority Area 2.

Sediment deposited in Turkey Creek Lake would be reduced from the present 52,000 tons per year to 44,000 tons per year, a reduction of 8,000 tons per year. Of this 44,000 tons per year, 23,000 tons per year will be derived from Priority Area 1 and 21,000 tons per year from Priority Area 2.

Structural measures and associated land treatment measures[2/] will be installed in stage 2. Construction erosion will amount to approximately 27,000 tons. This total amount will be spread over an approximately four year construction period. The average amount of erosion per year for the four year period is approximately 7,000 tons. Less than 1,000 tons of this will reach the Lake during the four year period.

WATER QUALITY

Extensive water quality analysis of Turkey Creek Lake has been conducted by the U.S. Geological Survey, the Soil Conservation Service and environmental consulting firms. Inorganic, organic, bacteriologic, metals, and physical properties were analyzed at different times during the past three years.

Pesticide analysis were not made on the water column because of the difficulty of isolating the compounds. However, fish tissue and bed sediment analysis for pesticides were used as an indicator of pesticide levels in the Lake. For fish flesh concentrations refer to figure 3.

All parameters except total phosphorous were within acceptable limits according to the Environmental Protection Agency (EPA) freshwater aquatic life guidelines. Twenty-seven USGS water quality samples taken from 1977-78 averaged 0.148 ppm total phosphorous. This exceeds the 0.1 ppm concentrations recommended by the EPA, but is representative of phosphorous concentrations found in most of Louisiana's lakes and rivers. High phosphorous concentrations are associated with plant nuisance growth in water which can alter aquatic ecosystems. Figure 1 compares the average concentration of phosphorus in Turkey Creek Lake for 1974-1979 to the recommended EPA Standards.

2/ These include surface drains, drainage land grading, and structures for water control (pipedrops).

Water quality parameters analyzed from storm hydrograph information taken in tributaries entering the Lake indicated high turbidity, high suspended and dissolved solids and high nutrient loads. This is indicative of the significant amounts of soil erosion occurring on the agricultural land.

The extensive wetland areas located in the northern portion of the Lake are serving as a filter for removing pollutants prior to entering the Lake.

Residues of DDT and Toxaphene will remain in the environment for a long period of time (years).

Pesticide analysis of bed sediment taken by the U.S.G.S. in 1977, 1978, and 1979, indicate that there are undesirable concentrations of chlorinated hydrocarbon pesticides present in the bed material.

Results of the analysis of samples collected by U.S. Geological Survey are as follows:

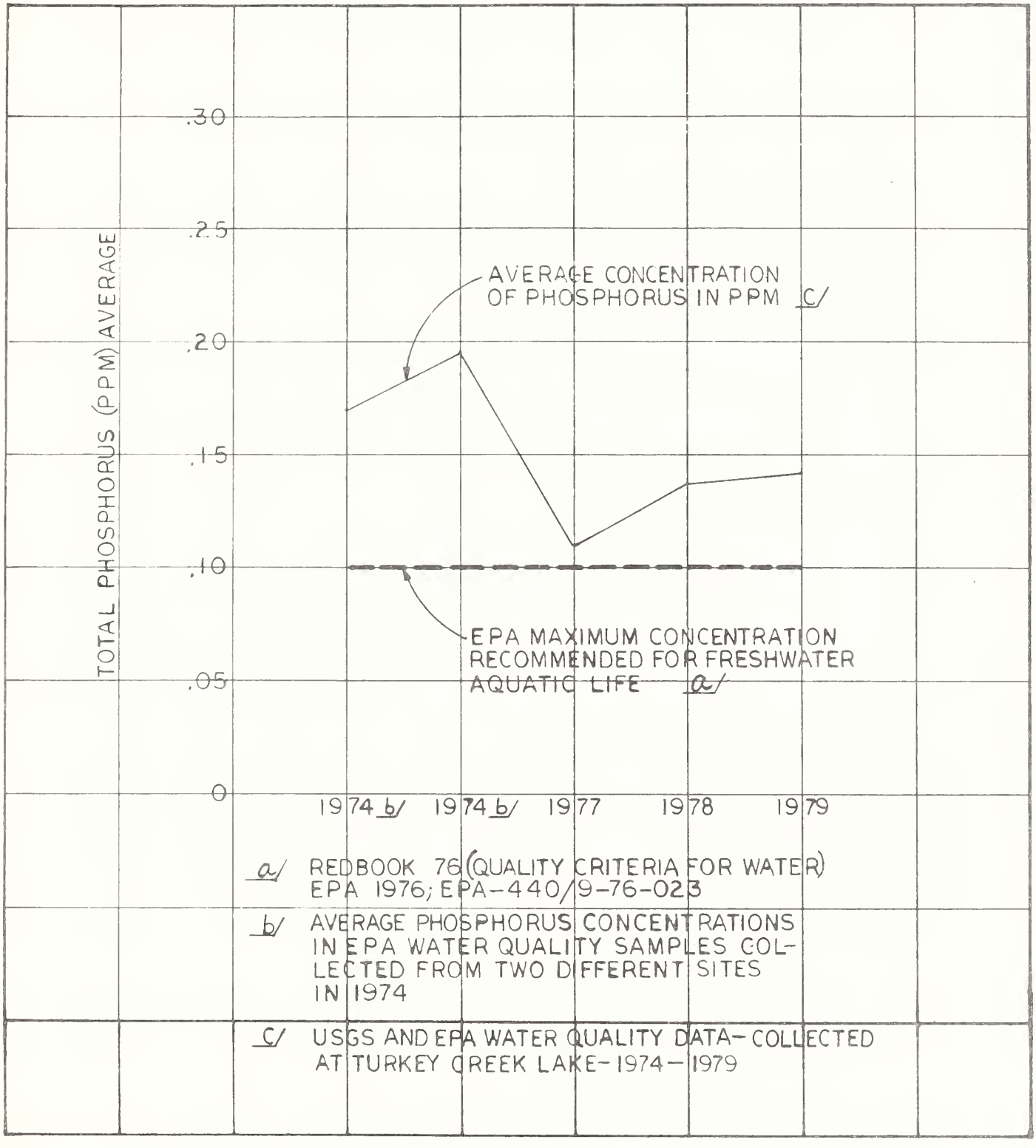
	DDD	DDE	DDT	Toxaphene
1977	--	33 ppb	20 ppb	--
1978	10 ppb	14 ppb	--	--
1979	23 ppb	36 ppb	4.4 ppb	41 ppb

Pesticides are transported from cropland to streams and the Lake attached to sediment. As the velocity of the runoff water is reduced, the sediment settles in onfarm drainage systems, the Lake's tributaries and to the bottom of the Lake. The amount of DDT and Toxaphene applied to cropland has been greatly reduced during the past decade. DDT was banned from use in 1973 and Toxaphene has been replaced with newer and more environmentally favorable pesticides. Even though their use has been limited, residues from past applications have remained in the environment. With the high concentrations of pesticides found in the Lake's bed material, benthos and other organisms in the food chain are metabolizing these substances and are contaminating higher food chain organisms including fish.

Impacts

Water quality in the Lake and its tributaries will be improved due to implementation of the accelerated land treatment program. The total sediment loads from the watershed will be reduced. This will decrease the amount of suspended and dissolved solids entering the lake in runoff water.

FIGURE 1 - AVERAGE CONCENTRATIONS OF PHOSPHORUS IN TURKEY CREEK LAKE



The land treatment program will reduce the amount of pesticide loads eroding from cropland fields. For example, on gently sloping land, terracing and contouring would reduce Treflan losses from 7 to 4, G/Ha, MSMA from 75 to 25 G/Ha, EPN from 32 to 23 G/Ha, Pounce from 19 to 7 G/Ha, and DEF from 48 to 23 G/Ha yearly.[3/]

A more definitive analysis of DDT and Toxaphene loads were made and the effects on sport fisheries were evaluated. Refer to figure 3 in the Fish and Aquatic Resources section for projections.

According to CREAMS model projections, the amount of phosphorus delivered to the edge of fields with land treatment will be reduced by 43% on gently sloping land, 35% on undulating sloping land and 35% on nearly flat or land leveled fields. This will result in a reduction in phosphorus and other nutrient loadings presently entering the Lake.

Turbidity caused by the feeding activities of bottom dwelling fish species may be reduced when the land treatment and fish management programs are implemented. According to CREAMS model projections, it will take 11 years for the game fish populations to peak after programs are implemented. An increase in game fish population may result in a decrease in food fish populations with a corresponding drop in turbidity.

FISH-AQUATIC RESOURCES

The major fisheries in the drainage area are Turkey Creek Lake and the tributaries entering the Lake. The major game fish species present are largemouth bass, white crappie, black crappie, bluegill, warmouth, and other sunfish. Commercial food fish species present are carp, freshwater drum, buffalo, bowfin, paddlefish, gar, catfish and river carpsucker. High populations of forage fish also exist. These include gizzard shad, threadfin shad, shiners, and minnow species. Up until 1972, the Lake was noted for its good largemouth bass, crappie, and bluegill fishing.

According to fish population studies conducted from 1970-1980 by the Louisiana Department of Wildlife and Fisheries, gamefish populations have declined while commercial food fish species have been increasing. Figure 2 shows the total weight of available size game fish, commercial food fish and forage fish sampled during 1970-1980.

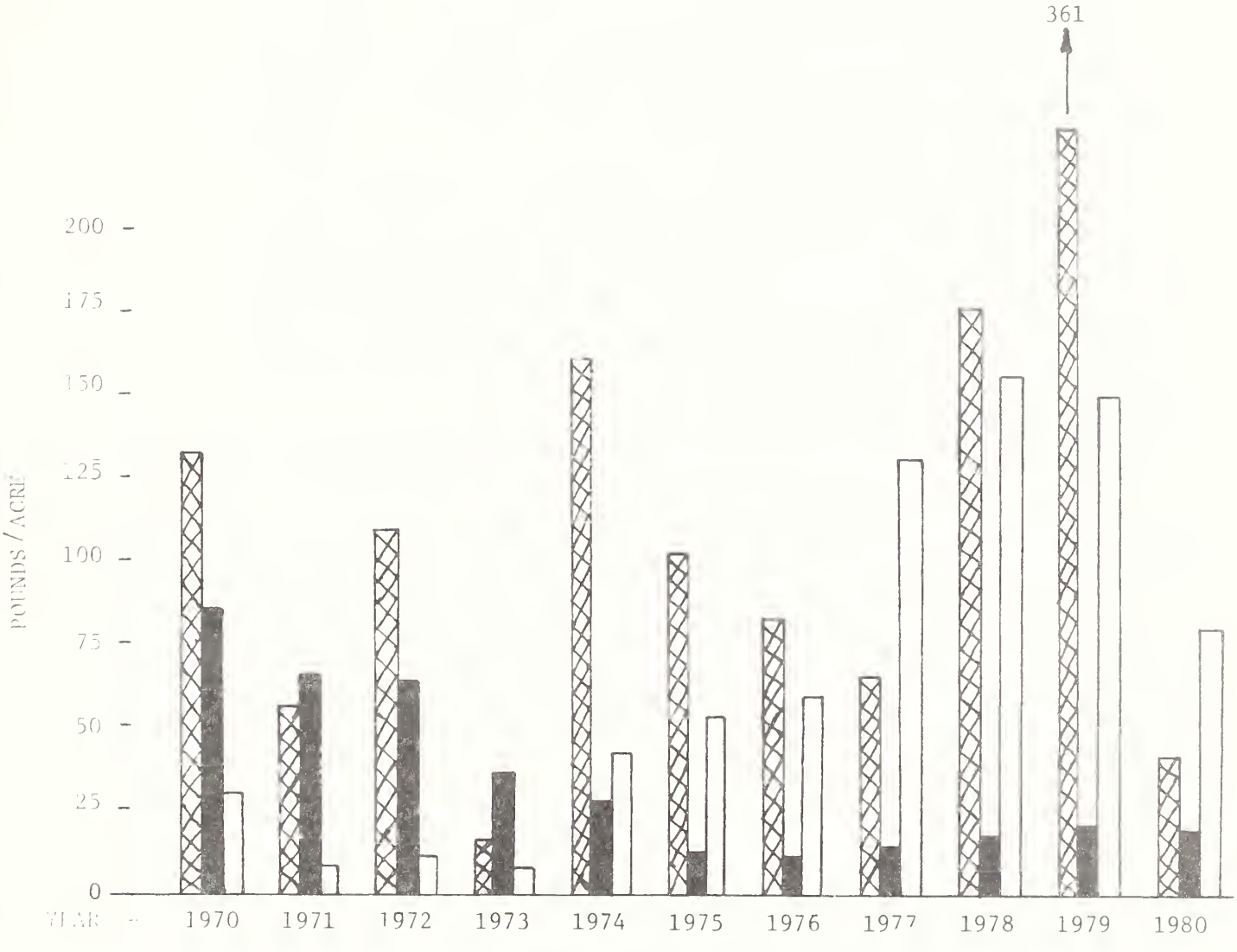
The ratio of game fish to commercial food fish indicates that the fish population is out of balance. Commercial food fish are now the dominant species.

One reason for the decrease in sport fishing is due to sediment and pesticides entering into the Lake. (See figure 4)

The dominant source of sediment in the Lake is agricultural activity.

3/ Knisel, Walter G., Editon, "CREAMS: A Field-Scale Model for Chemicals, Runoff, and Erosion from Agricultural Management Systems," U. S. Department of Agriculture, Conservation Research Report No. 26, May, 1980.

FIGURE 2: West Franklin Watershed
Turkey Creek Lake
Total Pounds of Available Fish - 1970 -1980 a/



FORAGE FISH - Gizzard Shad, Threadfin Shad, Shiners, Misc. Minnows.

GAMEFISH - Large mouth Bass, White & Black Crappie, Bluegill, Sunfish, Yellow Bass.

COMMERCIAL FOODFISH - Buffalo, Carp, Freshwater Drum, River Carpsucker, Catfish and Gar.

a/ Louisiana Department of Wildlife and Fisheries - Fish Population Survey-1970-1980.

Some of the most detrimental impacts of sediment to the aquatic resources are:

(a) Sediment is known to transport toxic materials that are attached.
(b) Phytoplankton production is decreased. Sediment in water reduces light penetration which is necessary for phytoplankton production. Phytoplankton are minute plants and are important in the base food chain.
(c) The number of benthic organisms and invertebrates are reduced. Benthos are organisms attached or resting on or near the bottom of a stream or lake. Sediment in water causes direct mortality to benthos which are a necessary part of the food chain.
(d) Fish reproduction is decreased. When sediment covers egg masses, hatching is reduced and mortality increases.
(e) Habitat for fish and other organisms is modified. Feeding, breeding, spawning, and other key areas are covered.
(f) Excessive sediment clogs gills and respiratory passages of fish and shellfish.
(g) Sediment is a major carrier of nutrients (especially phosphorus) into the biotic community.

The high levels of insecticides found in the fish tissue is one reason for the change in fish population shifts in Turkey Creek Lake.

Four whole body fish tissue samples analyzed in 1979 and 1980 contained organochlorine pesticide concentrations exceeding Food and Drug Administration (FDA) edible fish tissue guidelines of 5 ppm. Two samples collected in 1979, one consisting of largemouth bass and white crappie, and the other of catfish, contained Toxaphene plus DDT and its metabolites totaling 7.0 ppm and 6.7 ppm respectively. The two 1980 samples, one consisting of white bass and the other of white crappie contained Toxaphene plus DDT and its metabolites totaling 6.61 ppm and 6.17 ppm respectively. Other pesticides were found, but in concentrations that did not exceed FDA guidelines.

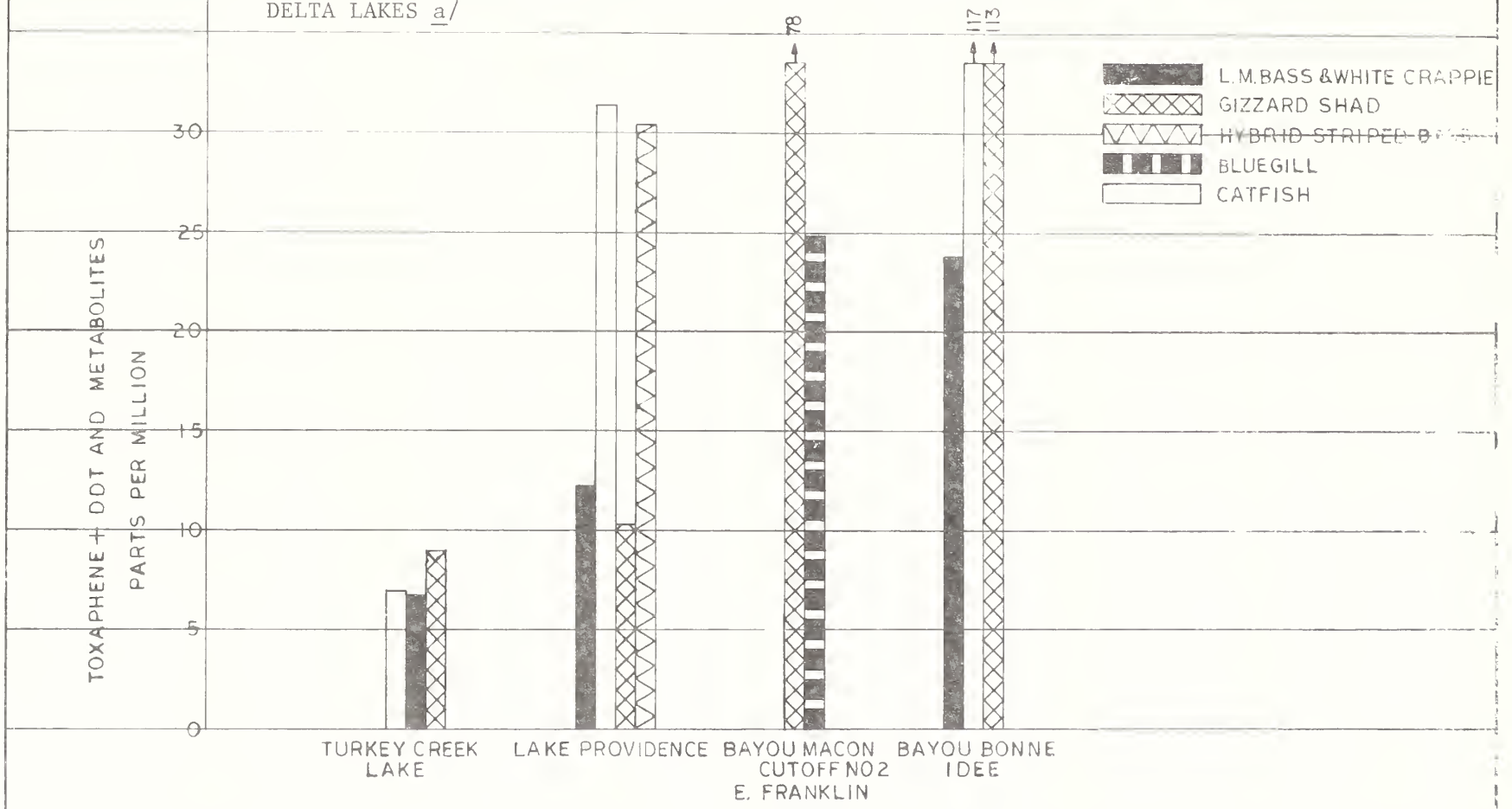
The FDA limit does not apply to the allowable concentrations for growth and reproduction; however, the best information available suggests that 1 ppm Toxaphene and 1 ppm DDT and its metabolites are the maximum amounts that sport fish can tolerate to function normally.[4/]

Other lakes in the agricultural delta region of Louisiana have exhibited similar problems with pesticide pollution and sport fisheries reductions. Figure No. 3 compares pesticide concentration found in Turkey Creek Lake and three other Louisiana lakes and bayous. The crops, pesticides, and agricultural practices applied are similar in all four of these areas.

4/ Columbia National Fisheries Research Laboratory, Columbia, Missouri

FIGURE 3: W E S T F R A N K L I N W A T E R S H E D

CONCENTRATION OF PESTICIDES IN FISH TISSUE IN TURKEY CREEK LAKE AND OTHER LOUISIANA DELTA LAKES a/



a/ Samples were collected by the Soil Conservation Service and the Louisiana Department of Natural Resources. Samples were analyzed by the Louisiana State University Feed & Fertilizer Laboratory. The results are a composite of samples collected between 1973 - 1979.

DDT and Toxaphene have a very long half life (years), and a very significant amount of these insecticides still remain in the fields. These insecticides attach themselves to soil particles leaving the fields.

It is felt that the reason the fish in Turkey Creek Lake have not accumulated as much pesticides as in the other lakes is due to the filtering of sediment in the wetland system above the Lake.

As mentioned before, cropland is the major source of sediment and pesticide pollution entering Turkey Creek Lake. Pesticides attached to soil particles (pesticide loads) entering the Lake from 1970-1980 were estimated by using the CREAM model[5/]. These estimates along with the weight per acre of adult size game fish collected from the Lake during that same time period are plotted on figure 4.

According to figure 4, there has been a decrease in the concentrations of pesticide loads leaving the cropland from 1970-1980. This is due in part to three factors: 1) DDT was banned from use in 1973 because of its toxic effect on the environment; 2) Toxaphene has been replaced with more efficient synthetic pyrenthroid compounds. At the present time very little Toxaphene, if any, is being applied in the watershed[6/]; 3) The residues which remain from past applications are decaying. This figure also shows that the gamefish populations have decreased over the past 10 years. Even though the pesticide loads are decreasing, enough of these compounds have accumulated and remain in the environment to affect aquatic communities.

The large populations of commercial food fish may further compound the pesticide problem. The bottom feeders such as buffalo, carp, and drum stir the bottom sediments, which contain high concentrations of DDT, DDE, and Toxaphene. This resuspends the sediments and increases the availability of the pesticides to the biotic community.

The Boeuf River backwater flows into the Lake during periods of high water. It is not known how significant an impact this has on the water quality and fisheries resources of the Lake. Its effect would depend on the time and duration of flooding, the quality of water in the Boeuf River, and how quickly the water depth fluctuates, especially when the backwater is flowing out of the Lake.

Impacts

The installation of the accelerated land treatment program will reduce the amount of suspended soil particles entering the Lake. Total sediment reaching Turkey Creek Lake tributaries will be reduced by an average of 34,000 tons each year.

The benefits of land treatment on reducing the delivery of Toxaphene and DDT plus metabolites were evaluated with the CREAMS model. The model was applied to different type fields, crops, and resource management systems. With land treatment, land leveled (nearly flat), gently sloping, and steep sloping fields will have 37, 38, and 70 percent respectively reduction in the delivery of Toxaphene and DDT plus metabolites.

5/ An Evaluation of Resource Management Systems for Cropland in the West Franklin Watershed, Louisiana (unpublished).

6/ Dr. Jack Bagent, LSU, Louisiana Cooperative Extension Agronomist.

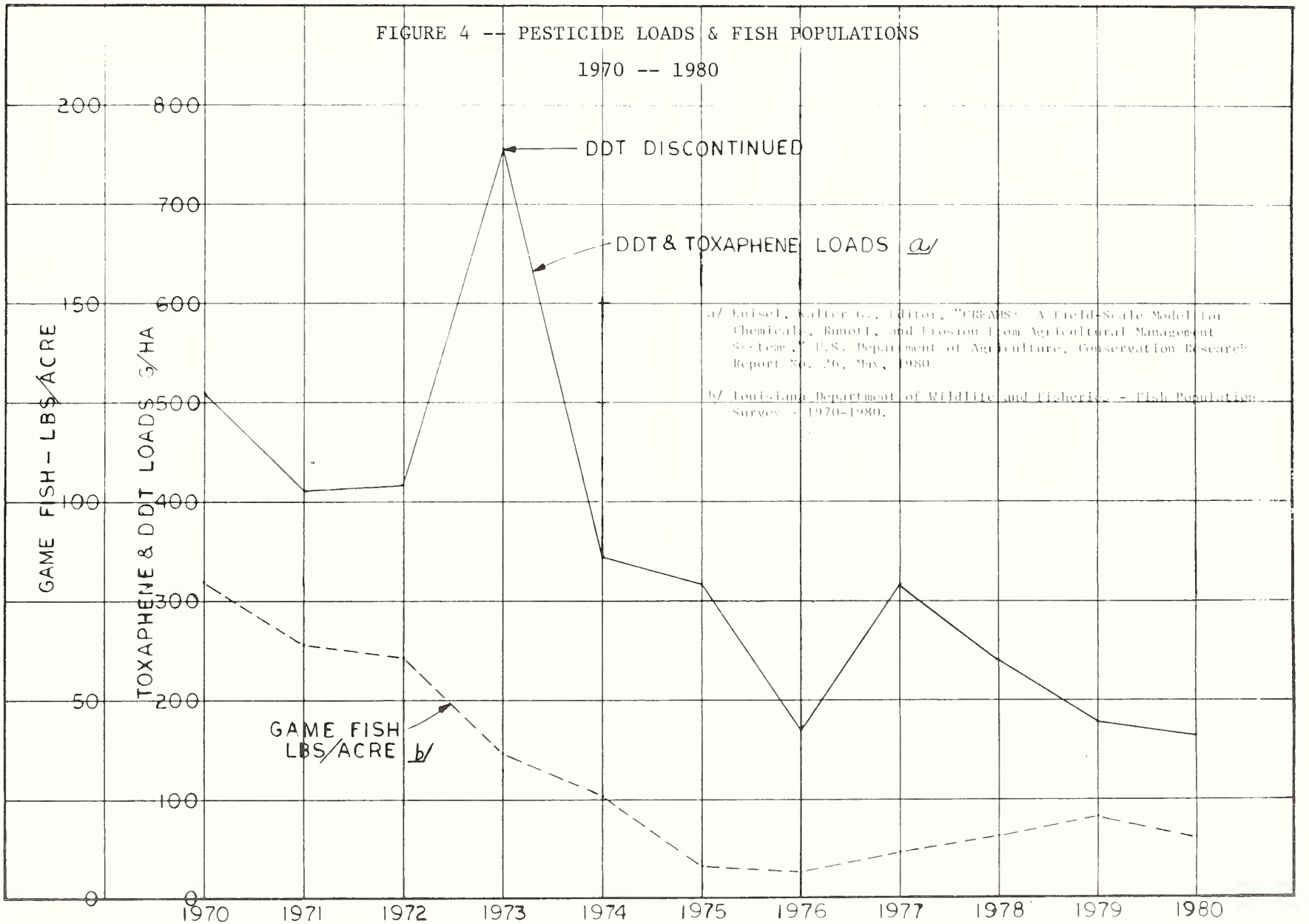


FIGURE 4 -- PESTICIDE LOADS & FISH POPULATIONS
1970 -- 1980
DDT DISCONTINUED
DDT & TOXAPHENE LOADS a/
GAME FISH LBS/ACRE b/
GAME FISH - LBS/ACRE
TOXAPHENE & DDT LOADS G/HA
200
150
100
50
0
800
700
600
500
400
300
200
100
0
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
a/ Knisel, Walter G., Editor, "CREAMS: A Field-Scale Model for Chemicals, Runoff, and Erosion From Agricultural Management Systems," U.S. Department of Agriculture, Conservation Research Report No. 26, May, 1980
b/ Louisiana Department of Wildlife and Fisheries - Fish Population Survey - 1970-1980.

The estimated time it will take for the game fish population to recover due to the reductions in Toxaphene and DDT are shown in Table 3.

Table 3 - Number of Years to Recover an Acceptable Game Fish Population

Type of Treatment	Years to Recover
No Project	30+
80% Land Treatment in Priority Area 1 and fish management on Turkey Creek Lake	15
60% Land Treatment in Priority Area 2, and 80% land treatment in Priority Area 1 with fish management on Turkey Creek Lake.	11

These CREAMS model projections were based on the effects of the implementation of the Resource Management Systems on the lakes watershed. It did not take into account the backwater which could enter the lake from the Boeuf River.

The projection to fisheries response in the above tabulation is based upon implementing a cooperative fish management plan in conjunction with land treatment.

As illustrated in Table 3, the return of the sport fisheries with no project is uncertain but will probably be in excess of 30 years.

The 11,900 acres of cropland in Priority Area 1, the major contributor of Toxaphene and DDT, will have land treatment applied that will result in a 97.5% treatment factor (see Appendix C). The 14% reduction in amount of sediment per year is not to be confused with the term "treatment factor." The term "treatment factor" refers to the percent of possible reduction in erosion that can be accomplished while maintaining present land use and utilizing the most advantageous Resource Management Systems. This will be accomplished by land treatment and land use changes on 80% of this acreage. A concentrated effort will be made to apply the land treatment on the most erosive soils in this area. With this amount of land treatment and with fish management, the game fish population will recover to a reasonable peak population in 15 years. It is planned that the remainder of the drainage area will have approximately 60% of the land treatment installed. This will further reduce the amount of time required to get the lake back to a point where it will have a viable sport fish population in 11 years.

Further information obtained from the CREAMS model evaluation indicated that within one year after the installation of the land treatment program, the Lake would recover to the point that the fish flesh concentrations would be below the 5 ppm FDA limit for human consumption.

In addition to the improvement of the fishery by reducing Toxaphene and DDT, the delivery of other herbicides and insecticide compounds such as Treflan, MSMA, EPN, Methyl Parathion, Pounce and DEF will be reduced. The beneficial effects of the reductions were not quantified; however, the reductions should decrease the potential of acute toxicity to the fishery.

STREAMS AND WATERBODIES

Stream flow of major tributaries of Turkey Creek Lake range from ephemeral and intermittent to ponded near the lake. (See appendix E for map of major tributaries.) Most of the drainage area of Turkey Creek Lake is in agricultural production. The soils here are very erosive and sediment loads in cropland runoff are extremely high. Sediment damages to the lake, its tributaries, and onfarm drainage systems is significant.

Water carrying capacity of streams and drainage channels is reduced when sediment is deposited. More frequent maintenance of field drains and main lateral drainage systems is required due to sedimentation. This causes increased time and expense for the land user and leaves the channels devoid of cover more often, resulting in additional erosion.

Sedimentation is particularly severe during high intensity storms in the winter and spring when fields have little or no cover.

Impacts

Favorable impacts on streams of the drainage area and Turkey Creek Lake will result from a reduction of present sediment loads. Less sediment and agricultural chemicals in the water will improve the biotic environment. Onfarm drainage channels will have to be maintained less frequently.

WETLAND

The majority of drainage entering the Lake flows through Turkey Creek and West Turkey Creek. Wetlands located at the north end of the Lake and extending for several miles up these two tributaries serve to filter out the sediment before the water enters the Lake. It is estimated that 85% of the sediment load is removed before it reaches the Lake.

The wetland areas provide very productive habitat for migratory and resident waterfowl, furbearing mammals, reptiles, and amphibians. Fish also use these areas for spawning activities especially during spring high water periods.

Impacts

Land treatment will reduce the amount of sediment being deposited in the wetland areas. This will enhance the biological productivity of the wetlands for fish, waterfowl, and other wildlife.

WILDLIFE HABITAT

Wildlife habitat is rated as fair to good for most wildlife species inhabiting the drainage area. The most common upland game bird species are bobwhite quail and mourning dove. The flood plains of Turkey Creek, Little Turkey Creek and West Turkey Creek immediately above Turkey Creek Lake are excellent habitat for waterfowl. These wetland areas offer excellent nesting sites for resident wood duck populations and other aquatic birds. The Lake also provides excellent resting and feeding

habitat for migratory waterfowl in the fall and winter months. Game animals found in this area include gray squirrel, fox squirrel, swamp rabbit, cottontail rabbit, and whitetailed deer. Nongame and furbearing animals found in the drainage area include opossum, raccoon, nutria, muskrat, beaver, skunk, fox, coyote, mink, mice, snakes, lizards, and salamander. Songbirds and other nongame birds are numerous throughout this area.

Impacts

The accelerated land treatment program will benefit existing wildlife resources by the reduction in sediment. The installation of land treatment measures such as filter strips, conservation tillage, crop residue use, and cover, and green manure crops will enhance the upland wildlife habitat and food supply.

ENDANGERED AND THREATENED ANIMALS

Endangered and threatened species that may occur, or pass through, the drainage area include the Eskimo curlew, Arctic peregrine falcon, and the American alligator.[7/] Of all the animals listed, the American alligator is the only one that is a resident of the area. It's habitat is good to fair in Turkey Creek Lake and its major tributaries.

Impacts

In accordance with Section 7(c) of the Endangered Species Act of 1973, as amended in 1978, the Soil Conservation Service has initiated the "Step-Down Process." This process is designed to ensure protection of listed or proposed species or critical habitat as provided for by the Endangered Species Act. A biological assessment was completed by the Soil Conservation Service. Based on this assessment the U.S. Fish and Wildlife Service issued a Biological Opinion stating that the project will not jeopardize the American alligator. Based on the minute chance of occurence of the Eskimo curlew or Arctic peregrine falcon in the drainage area, it is very unlikely that project actions could have any significant adverse effects on these two species.

FLOOD PLAIN

In compliance with Soil Conservation Service rules and regulations for flood plain management, it has been determined that the area to be benefitted by the project is composed of agricultural flood plain and surrounding higher land that has been in cultivation for at least 3 years prior to the request for assistance.

Impacts

There will be no adverse impacts to flood plains by the proposed project action. No adverse effects or incompatible developments will occur as a result of the project on the nonbenefitted acreage of the flood plain remaining in forestland.

7/ Letter of June 7, 1979, from the Regional Director, U.S. Fish and Wildlife Service. Potential impacts on these species is covered by a separate biological assessment as required by Section 7(c) of the Endangered Species Act.

FLOODWATER AND DRAINAGE

The primary agricultural water management problem in the area is a combination of inadequate drainage and flooding of a varying degree on 12,270 acres in Priority Area 1 and 39,130 acres in Priority Area 2 of agricultural land during the cropping season. The major portion of the damage results in reduction crop yields. In addition, the poor drainage causes increased production costs through replanting, extra seedbed preparation, increased cost for weed and grass control, and less intensive use of management practices.

Potential for solving these problems includes the installation of associated land treatment measures and structural measures. Structural measures and associated land treatment are not planned for installation in Stage 1 of the West Franklin watershed project, but will be included in the second stage. The planned structural measures and associated land treatment measures will be addressed and impacts assessed in an environmental impact statement at that time.

Impacts

Land treatment measures will reduce runoff by increasing infiltration rates into the soil and provide soil cover during times when crops are not grown, thus reducing erosion and sediment. The reduction in runoff and sediment delivered to drainage systems will help maintain their efficiency.

PRIME FARMLAND

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses (the land could be cropland, pastureland, forest land, or other agricultural land, but not urban and built-up or water). It has the soil properties, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air and are not excessively erodible or saturated with water for long periods of time during the growing season. Prime farmlands either do not flood frequently or are protected from flooding. Examples of soils in the drainage area that qualify as prime farmland are Calhoun silt loam, Dexter silt loam, 1 to 3 percent slopes, Egypt silt loam, and Gigger silt loam, 1 to 3 percent slopes. There are about 68,630 acres of prime farmland in the drainage area.

Impacts

The installation of the project will result in 106 acres of prime farmland being converted to toher uses (grassed waterways) in Priority Area 1 and 646 acres in Priority Area 2.

RECREATION

The Department of Culture, Recreation, and Tourism - Office of State Parks identifies three public recreational facilities within the West Franklin Watershed. These are minor recreation developments with limited facilities, sport activities, and picnic facilities. There are six commercial and one public boat launching facilities on Turkey Creek Lake. Turkey Creek Lake is the major source of water-based recreation. The activities are mostly confined to waterfowl hunting and limited fishing.

In the State Comprehensive Outdoor Recreation Plan, the Department of Culture, Recreation, and Tourism - Office of State Parks identifies the recreation needs for the eleven parishes in Planning Region 8. Franklin Parish is located in this planning region. Freshwater fishing and motorboating are listed as No. 1 and No. 3 respectively of the top five recreation needs for the planning region.

Impacts

By reducing erosion and sedimentation, thereby improving water quality, the project will improve the fishery habitat. Monetary benefits will occur to the Lake from the increased usage by fisherman. Improved facilities will result in increased use of the Lake for fishing. Waterfowl hunting is good to excellent in the Lake. The project will aid in maintaining or improving existing conditions for waterfowl hunting.

From this analysis, it was concluded that the project would have no significant impact on transportation and employment, land use, and flora change, air quality, groundwater, mineral resources, and cultural resources of local or National significance. Therefore, these factors were not discussed in this assessment, although basic data concerning these items have been collected in order to determine the magnitude of project impacts.

VISUAL RESOURCE

The major factor detracting from the existing landscape is erosion and the deposition of sediment. Sheet erosion cuases rills in fields and adds to the harshness of the normal agricultural patterns of the area.

Impacts

The project will create a more orderly landscape within the drainage area. The installation of land treatment will result in lines and forms more harmonious with the natural landscape in agricultural areas. The scenic quality of the countryside will be improved. The overall visual quality of the project surface water resources will be improved through a reduction in turbidity.

SUMMARY OF ADVERSE IMPACTS

As outlined in the previous sections, the project will have no adverse impacts on the economic, environmental, and social factors analyzed. If at any time during installation, it is found that there will be an adverse impact on these or factors not analyzed, such factors will be properly analyzed and steps made to reduce the impacts on them.

SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

Much of the Drainage Area is in cultivation and is expected to remain so.

The project will achieve both short-term and long-term goals for economic development and environmental quality. Erosion damages on cropland will be reduced and the water quality in Turkey Creek Lake will be improved by this reduction. If the nation's need for agriculture produces changes, commitments of the land resource base can be revised.

CONSULTATION

Application for Public Law 83-566 assistance in solving problems relating to water and related land resources was made by the Northeast Soil and Water Conservation District, the Franklin Parish Watershed Commission, and the Franklin Parish Police Jury in 1966. Their application was approved by the Louisiana State Soil and Water Conservation Committee in 1968.

Water quality data from the U. S. Geological Survey, Louisiana State University, and the Environmental Protection Agency was used during the evaluation.

Expertise of Walter G. Knisel, Jr., and Arlin D. Nicks of the Science and Education Administration-Agriculture Research were used to gather and assemble data needed to run the CREAMS model.

The following agencies and staff members contributed information and consultation for this assessment:

M. B. Watson and Dudley Carver - Louisiana Department of Wildlife and Fisheries.

James Nipper - U. S. Fish and Wildlife Service.

Louis Johnson - Louisiana Department of Natural Resources, Office of Environmental Affairs-Water Pollution Control Division.

Dr. Jack Bagent - Louisiana Agriculture Extension Service, Louisiana State University.

Foster Mayer - Columbia National Fisheries Research Laboratory, Columbia, Missouri.

Dr. Li-Tse Ou - University of Florida, Institute of Food and Agricultural Sciences.

Turkey Creek Lake Commission.

Feed and Fertilizer Laboratory, Louisiana State University.

CONCLUSION

The sponsors agreed to pursue the installation of the land treatment program in Priority Area 1 first. This environmental assessment reveals that the installation of the land treatment program in Priority Area 1 would result in no adverse impact to the human environment nor would it result in a controversy over other environmental issues. The assessment also reveals that the land treatment program in Priority Area 1 could function even if the remainder of the watershed project was not installed. Therefore, it is concluded that an environmental impact statement is not needed for the installation of the land treatment program in Priority Area 1.

The land treatment program in Priority Area 2 will be planned and installed with the remainder of the watershed project. The impacts of this area, along with the remaining of the watershed will be assessed in the environmental impact statement.

LIST OF PREPARERS AND QUALIFICATIONS

Name	Present Title (Time in Job-yrs.)	Education Degree(s)	Experience Titles & Time In Job-yrs.	Other (License, etc.)
		SOIL CONSERVATION SERVICE		
T. D. Prestridge Jr.	Staff Leader - 2	BS - Agr. Engr.	Staff Leader - 2 Planning Engr. - 6 Area Engineer - 10 Field Office Engr. - 12	Professional Engr. (P. E.) License
Aaron Hinkston	Economist - 7	BS MS Agr. Economics	Economist - 7	
Rick Simmering	Biologist - 1	BS Wildlife Mgnt.	Biologist - 1 District Conser. - 4 Soil Conser. 1	
Edward Hickey	Engineer - 4	BS Agr. Engr.	Planning Engr. - 4 Area Engr. - 4 Field Office Engr. - 7	P. E. License
Ronnie Venson	Soil Conser. - 6	BS Agronomy	Soil Conser. - 7 Soil Scientist - 5	
Charles R. Akers	Geologist - 17	BS Geology	Geophysicist - 3 Geologist - 24	Registered Professional Geologist
Kent R. Milton	Soil Conser. - 4	MS Agronomy	Soil Sceintist - 2 Soil Conservationist - 4	
John Burt	Environmental Engineer-STSC - 5	BS Civil Engr.	Sanitary Engr. (Miss.) - 17 Envirn. Health Eng. - 3	P. E. License

APPENDICES

Appendix A

West Franklin Watershed
Turkey Creek Lake Drainage Area

Land Use	Resource Management System	Conservation Practice
Continuous Soybean	Fall subsoil and develop seed bed with two passes of bedding plow (hipper; apply pre-emergent herbicide, and plant on old rows; apply post-emergent herbicide; 2 cultivations; harvest beans	Chiseling & subsoiling Grassed waterways or outlets Structure for water control
	Fall subsoil and develop seed bed with two passes of bedding plow (hipper); apply pre-emergent herbicide; plant on old rows; apply post-emergent herbicide; harvest beans.	Chiseling & subsoiling Conservation tillage Structure for water control
	Spring chisel and apply preplant herbicide; bed rows; plant on contour; 3 cultivations; harvest; install 20' wide filter strip at lower end of field; install grassed waterway for discharge water to leave field; apply land smoothing to eliminate lows.	Chiseling & subsoiling Crop residue use Contour farming Filter strips Land smoothing Structure for water control Grassed waterways or outlets
	Spring chisel plow and apply preplant apply preplant herbicide; bed rows and plant; 3 cultivations; harvest.	Chiseling & subsoiling Crop residue use Structure for water control
	Spring disc, chisel plow and apply preplant; drill beans; harvest.	Chiseling & subsoiling Crop residue use Structure for water control
Soybean-Wheat	Harvest beans; disc & plant wheat; harvest wheat; chisel, disc, bed rows, apply pre-emergent herbicide and plant; 2 cultivations; harvest beans.	Cover & green manure crop Chiseling & subsoiling Structure for water control

nd Use	Resource Management System	Conservation Practice
ybean-Wheat (Cont'd)	Harvest beans; disc and plant wheat; harvest wheat; chisel, disc, bed rows, apply pre-emergent herbicide and plant; 2 cultivations; harvest beans; install 20' wide filter strip at the lower end of field; install grassed waterway for discharge water to leave field.	Cover & green manure crop Chiseling & subsoiling Filter strips Grassed waterways or outlets Structure for water control
	Harvest beans; broadcast wheat; harvest wheat; chisel, disc, bed rows, apply pre-emergent herbicide and plant beans; 2 cultivations; harvest beans.	Cover & green manure crop Chiseling & subsoiling Structure for water control
	Harvest beans; broadcast wheat; harvest wheat; chisel, disc, bed rows, and plant on contour; 2 cultivations; harvest beans; install 20' wide filter strip at lower end of field; install a grassed waterway for discharge water to leave field; land form for erosion control to eliminate low areas.	Cover & green manure crop Chiseling & subsoiling Contour farming Filter strips Land smoothing Structure for water control Grassed waterways or outlets
tton	Spring chisel plow; disc & apply preplant herbicide; bed rows & plant on contour; 2 cultivations; 6 insecticide applications; defoliate; harvest; install 20' wide filter strip at lower end of field; install a grass waterway for discharge water to leave field; apply land smoothing to eliminate low areas.	Crop residue use Chiseling & subsoiling Contour farming Land smoothing Filter strips Grassed waterways or outlets Structure for water control
	Spring chisel plow; spring disc and apply preplant herbicide; bed rows and plant; 4 cultivations; 6 insecticide applications; defoliate; harvest; install 20' wide filter strip at lower end of field; install grassed waterway for the discharge water to leave field.	Chiseling & subsoiling Filter strips Grassed waterways or outlets Structure for water control

Appendix B

West Franklin Watershed
Turkey Creek Lake Drainage Area
Methodology

To evaluate the effectiveness of land treatment in reducing pesticides leaving the fields the Chemical, Runoff, and Erosion from Agricultural Management Systems (CREAMS) model was applied to three fields which typifies the cropland topography within the drainage area. The CREAMS model was developed by a task force of leading scientists within the Science Education and Administration, Agricultural Research Service. The model will predict the delivery of sediment, pesticides and nutrients from field size areas under various resource management systems, crops, soils, topography, and climatic conditions.

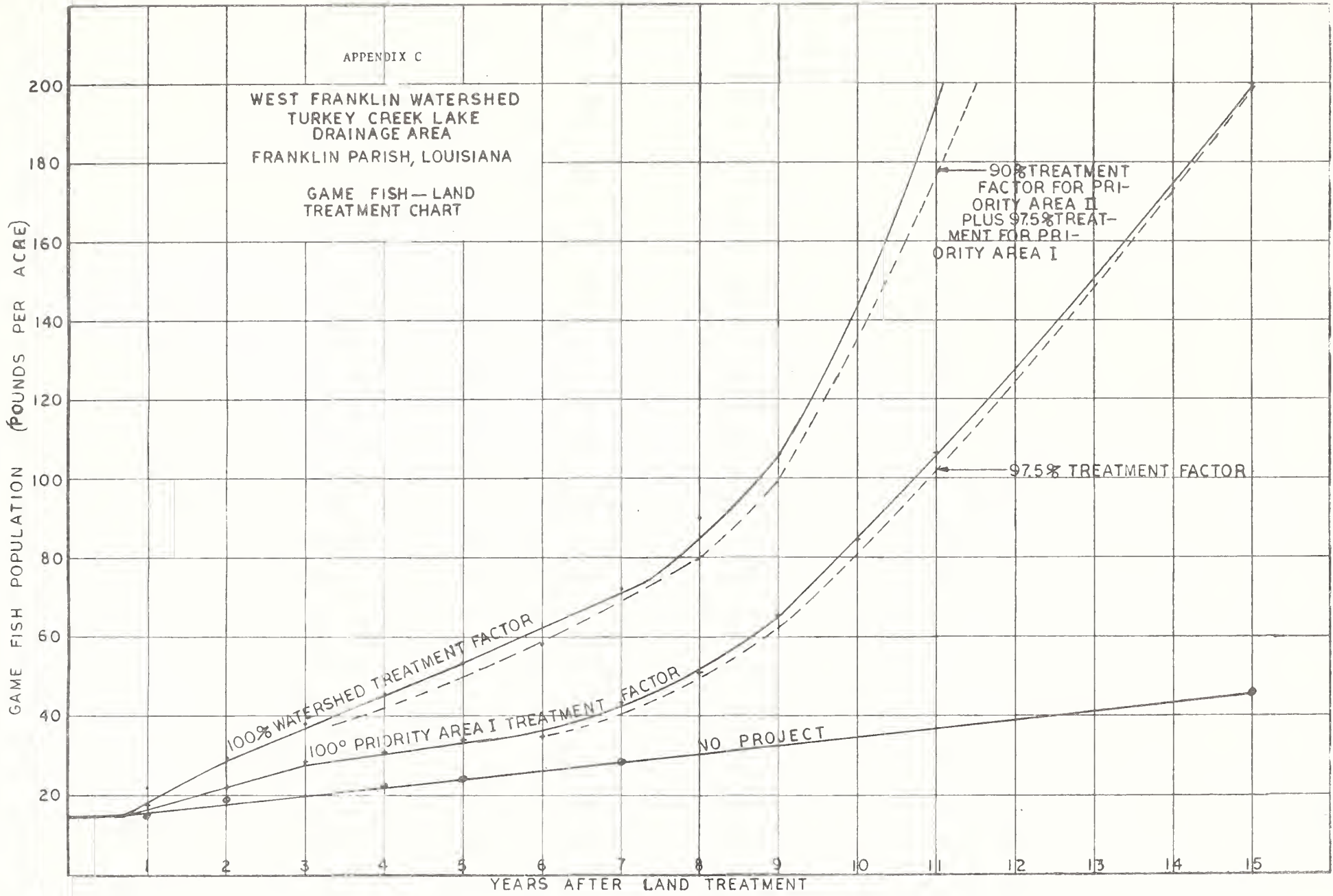
To project insecticide loads to the lake, long term model runs were made. The long term runs were based on applying toxaphene and DDT at the recommended rates, during the time both compounds were in use and discontinuing the application of these compounds when banned. In addiiton, the compounds were decayed with time by using the appropriate decay coefficient.

The total load from the cropland to the lake was computed by the weighted contribution and percent of drainage area in each type of field. The delivery ration was computed by using concentration of Toxaphene and DDT within the lake bottom sediments, compared to the concentrations leaving the fields using 1977-1978 data. The computed delivery ratio was 0.28 based on chemical loadings. From a later discussion with the SCS geologist in Louisiana, it was discovered that he had been using 0.27 in routing sediment to the Lake.

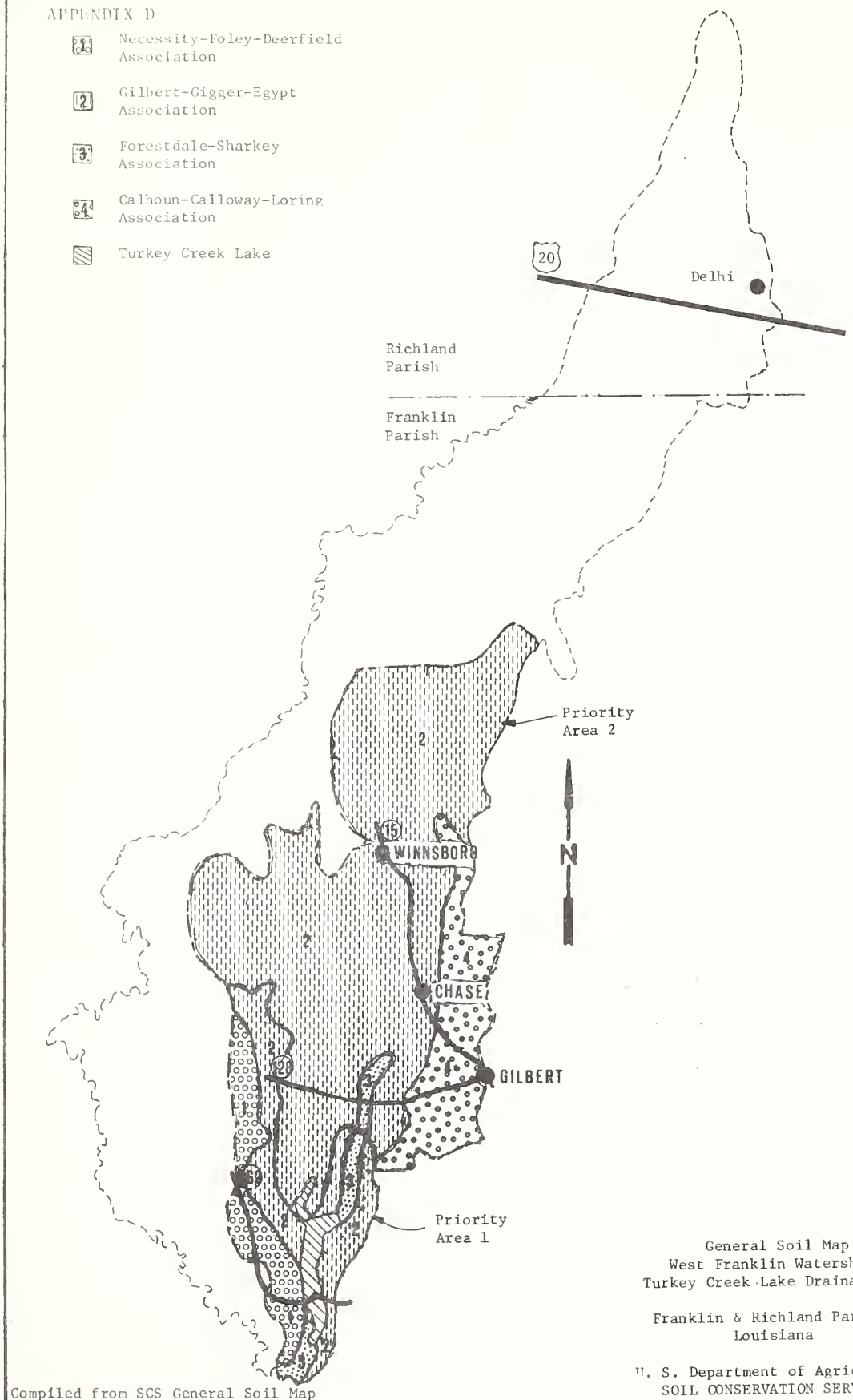
Based on the above methodology the reduction in toxaphene and DDT loads were evaluated with different resource management systems. The reduction to the Lake and fishery response was projected with different intensities of land treatment.

However, the fishery growth is dependent upon a fish management program as well as reductions in DDT and toxaphene. To observe the game fish population response, a hypothetical growth curve was developed. The curve is based on discussions with fishery biologists and it was concluded that fishery growth would be at an exponential rate similar to the rate of decay.

APPENDIX C


WEST FRANKLIN WATERSHED
TURKEY CREEK LAKE
DRAINAGE AREA
FRANKLIN PARISH, LOUISIANA
GAME FISH — LAND
TREATMENT CHART
GAME FISH POPULATION (POUNDS PER ACRE)
200
180
160
140
120
100
80
60
40
20
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
YEARS AFTER LAND TREATMENT
90% TREATMENT FACTOR FOR PRIORITY AREA II PLUS 97.5% TREATMENT FOR PRIORITY AREA I
97.5% TREATMENT FACTOR
100% WATERSHED TREATMENT FACTOR
100% PRIORITY AREA I TREATMENT FACTOR
NO PROJECT

APPENDIX D



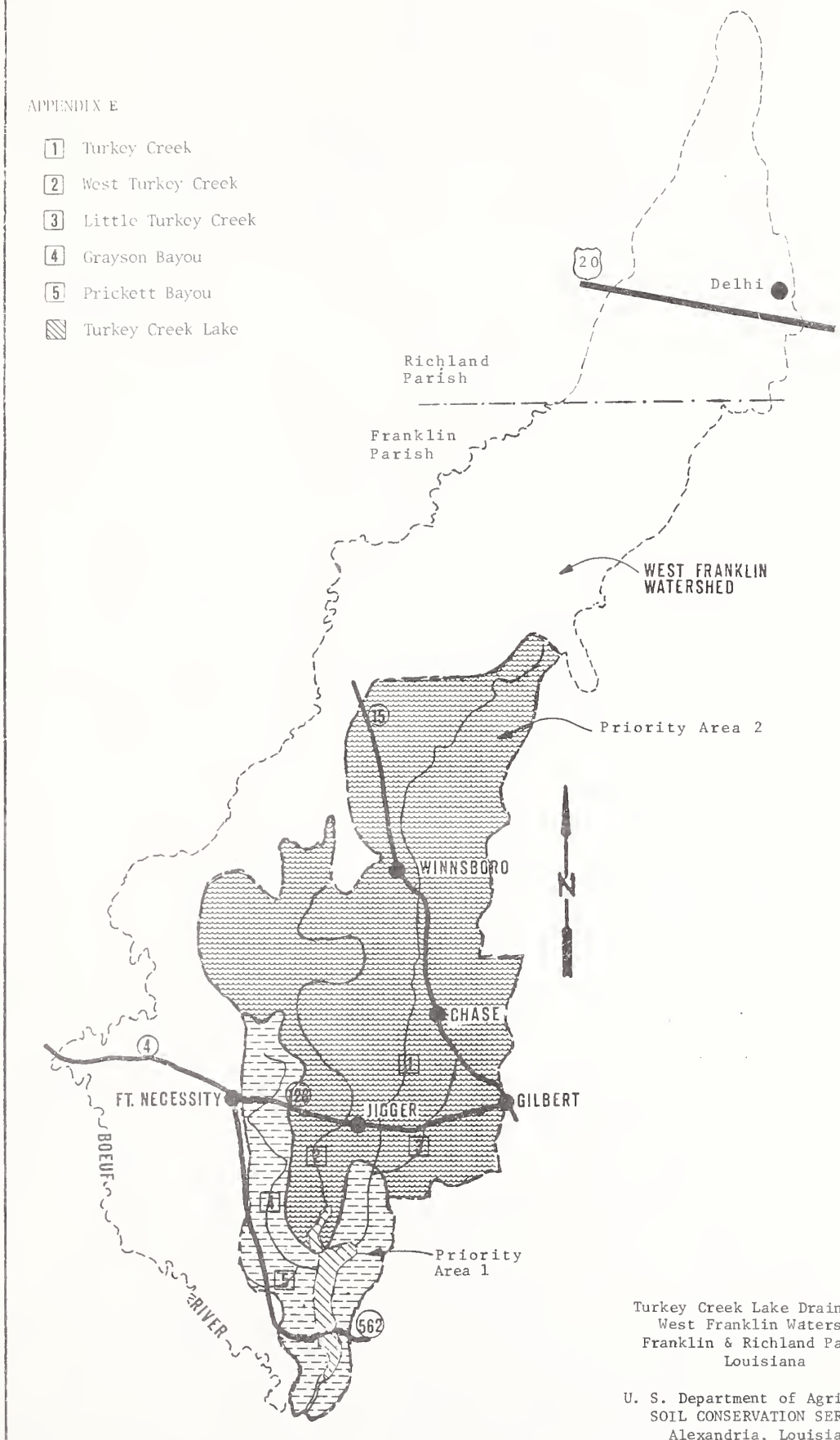
Compiled from SCS General Soil Map of Franklin Parish, Louisiana

General Soil Map
West Franklin Watershed
Turkey Creek Lake Drainage Area

Franklin & Richland Parishes
Louisiana

U. S. Department of Agriculture
SOIL CONSERVATION SERVICE
Alexandria, Louisiana

APPENDIX E



Turkey Creek Lake Drainage Area
West Franklin Watershed
Franklin & Richland Parishes
Louisiana

U. S. Department of Agriculture
SOIL CONSERVATION SERVICE
Alexandria, Louisiana